

WHAT IS CLAIMED IS:

1. A system comprising

a light source;

a pupil defining element (PDE);

a field defining element (FDE);

an optical system; and

a pattern generator,

wherein light emitted from said light source is transmitted through said PDE, said FDE, and said optical system to form illumination spots that substantially impinge only on desired illumination areas of the pattern generator and are substantially directed away from undesired areas of said pattern generator.

2. The system of claim 1, wherein said FDE is positioned closer to said pattern generator than said PDE.

3. The system of claim 1, wherein said PDE is positioned closer to said pattern generator device than said FDE.

4. The system of claim 1, wherein said FDE and PDE are refractive devices.

5. The system of claim 1, wherein said FDE and said PDE are diffractive devices.

6. The system of claim 1, wherein said optical system comprises:
a first optical element positioned after FDE; and
a second optical element positioned after said PDE.

7. The system of claim 1, wherein said pattern generator comprises one or more reflective pattern generating devices.

8. The system of claim 1, wherein said pattern generator comprises one or more liquid crystal display (LCD) devices.

9. The system of claim 1, wherein said pattern generator comprises one or more digital mirror devices (DMD).

10. The system of claim 1, wherein said pattern generator comprises one or more grating light valve devices.

11. The system of claim 1, wherein said pattern generator comprises one or more reticles.

12. The system of claim 1, wherein said pattern generator comprises one or more transmissive pattern generator devices.

13. The system of claim 1, wherein said pattern generator comprises one or more spatial light modulator (SLM) devices.

14. The system of claim 1, further comprising:
a light uniformity producing element positioned after the light source.

15. The system of claim 14, wherein the light uniformity producing element is one of a diffractive element and a refractive element.

16. The system of claim 1, wherein the PDE comprises one or more PDEs.

17. The system of claim 1, wherein the FDE comprises one or more FDEs.
18. A method comprising:
 - transmitting light through a PDE and a FDE to form beams of light;
 - directing said beams of light towards a pattern generator; and
 - illuminating substantially only desired illumination areas and avoiding undesired areas of said pattern generator based on said transmitting and directing steps.
19. The method of claim 18, wherein said transmitting step comprises forming diffracted light as said beams of light using said FDE and said PDE.
20. The method of claim 18, further comprising:
 - patterning a substrate with light that reflects from the desired illumination areas.
21. The method of claim 18, further comprising:
 - patterning a substrate with light that transmits through the desired illumination areas.
22. The method of claim 18, further comprising using one of a reticle or a contrast device as the pattern generator.
23. The method of claim 18, further comprising:
 - using a uniform beam profiler to produce light having a uniform beam profile as the light is transmitted through the PDE and the FDE.